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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,304	01/11/2002	Shoham Ben-David	BEN-DAVID=3	7765

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EXAMINER

GUILL, RUSSELL L

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/042,304

Applicant(s)

BEN-DAVID ET AL.

Examiner

Russell L. Guill

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on December 30, 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10-19, 21-30, 32 and 33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6, 10-19, 21-30 and 32-33 is/are allowed.
- 6) ☒ Claim(s) 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 10, 21, 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This Office Action is in response to an Amendment filed December 30, 2005. Claims 1, 4, 6 - 8, 10, 12, 15, 17 - 19, 21, 23, 26, 28 - 30, 32 and 33 were amended. Claims 9, 20 and 31 were canceled. No claims were added. Claims 1 - 8, 10 - 19, 21 - 30 and 32 - 33 are pending. Claims 1 - 8, 10 - 19, 21 - 30 and 32 - 33 have been examined. Claims 1 - 6, 10 - 19, 21 - 30 and 32 - 33 are allowable. Claims 7 - 8 are rejected. Claims 10, 21 and 32 are objected to.

### *Response to Remarks*

2. As an initial minor issue, the Examiner notes that claim 21 was amended, but the Applicant did not list the claim as amended in the first paragraph of Remarks. This issue requires no action, and is only mentioned in the unlikely case that it was not intended to amend claim 21.

3. Regarding **claims 4, 6, 10, 15, 17, 21, 26, 28 and 32** that were objected to for informalities:

a. Applicants' amendments to the claims overcome the objections.

4. Regarding **claims 7, 18, 29 and 33** rejected under 35 USC § 112, second paragraph:

a. Applicants' amendments to the claims overcome the rejections.

5. Regarding independent **claims 1, 12 and 23** rejected under 35 USC § 103:

a. Applicants' arguments, see pages 14 - 16, have been fully considered and are persuasive. Accordingly, the rejections are withdrawn.

*Claim Objections*

6. Claims 10, 21 and 32 are objected to because of the following informalities:
- a. Regarding claims 10, 21 and 32, the claims recite "the other traces." In order to avoid possible confusion, the phrase is interpreted as "the other traces already computed", as recited in claims 8, 19 and 30. Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- a. Claims 7 - 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - i. Regarding claim 7, the claim recites in line 3, "the selected states". The phrase appears to have insufficient antecedent basis. Correction or amendment is required.
  - ii. Claim 8 is rejected based on dependency on its intermediate and parent claims which are rejected under 35 USC 112.

*Allowable Subject Matter*

8. Claims 1 - 6, 10 - 19, 21 - 30 and 32 - 33 are allowable over the prior art of record.

9. **Claims 7 - 8** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

11. Regarding **claim 1**, while Beer and Torrieri teach a method for checking a model, which defines states of a system under study and a transition relation among the states, neither of these references taken either alone or in combination with the prior art of record disclose the aforementioned method for checking a model specifically including specifying a property that applies to a target set that comprises at least one target state among the states of the system under study; beginning from an initial set of at least one initial state among the states of the system, computing successive reachable sets comprising the states of the system that are reachable from the initial set; finding an intersection between one of the reachable sets and the target set; computing a plurality of mutually-disjoint traces from the at least one target state in the intersection through the states in the reachable sets to the at least one initial state, wherein the plurality of mutually-disjoint traces comprises at least one initial trace and at least one subsequently-computed trace; selecting the states on each subsequently-computed trace so as to maximize a distance of the subsequently-computed trace from at least the at least one initial trace and using the computed traces for checking the model, in combination with the remaining features and elements of the claimed invention. It is for these reasons that the Applicants' invention defines over the prior art of record.

12. Regarding **claim 12**, while Beer and Torrieri teach a model checking apparatus comprising a model processor, which is arranged to receive a model defining states of a system under study and a transition relation among the states, neither of these references taken either alone or in combination with the prior art of record disclose the aforementioned model checking apparatus specifically including receiving a specification of a property that applies to a target set comprising at least one target state among the states of the system under study; the processor being further arranged to computer, beginning from an initial set of at least one initial state among the states of the system, successive reachable sets comprising the states of the system that are reachable from the initial set; to find an intersection between one of the reachable sets and the target set; and to compute, for use in checking the model, a plurality of mutually-disjoint traces from the at least one target state in the intersection through the states in the reachable sets to the at least one initial state, wherein the plurality of mutually-disjoint traces comprises at least one initial trace and at least one subsequently-computed trace; and wherein the states on each subsequently-computed trace are selected so as to maximize a distance of the subsequently-computed trace from at least the at least one initial trace, in combination with the remaining features and elements of the claimed invention. It is for these reasons that the Applicants' invention defines over the prior art of record.

13. Regarding **claim 23**, while Beer and Torrieri teach a computer software product comprising a computer-readable medium in which program instructions are stored, which instructions, when read by a computer, cause the computer to receive a model defining states of a system under study and a transition relation among the states, neither of these references taken either alone or in combination with the prior art of record disclose the aforementioned computer software product specifically including receiving a specification of a property that applies to a target set that comprising at least

one target state among the states of the system under study; the instructions further causing the computer to compute, beginning from an initial set of at least one initial state among the states of the system, successive reachable sets comprising the states of the system that are reachable from the initial set; to find an intersection between one of the reachable sets and the target set; and to compute, for use in checking the model, a plurality of mutually-disjoint traces from the at least one target state in the intersection through the states in the reachable sets to the at least one initial state, wherein the plurality of mutually-disjoint traces comprises at least one initial trace and at least one subsequently-computed trace, and wherein the states on each subsequently-computed trace are selected so as to maximize a distance of the subsequently-computed trace from at least the at least one initial trace, in combination with the remaining features and elements of the claimed invention. It is for these reasons that the Applicants' invention defines over the prior art of record.

*Conclusion*

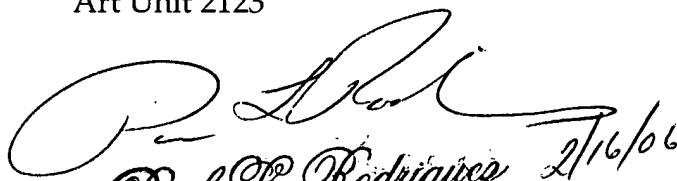
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell L. Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday - Friday 10:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RG

Russ Guill  
Examiner  
Art Unit 2123

  
Paul L. Rodriguez 2/16/06  
Primary Examiner  
Art Unit 2125